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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,315	10/01/2003	Keiji Hayashi	1324.68392	8188

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EXAMINER	
PAYNE, SHARON E	

ART UNIT	PAPER NUMBER
2875	

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/676,315	HAYASHI ET AL.	
	Examiner	Art Unit	
	Sharon E. Payne	2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *13 and 14* is/are allowed.

6)☒ Claim(s) *9-12,15 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details. *In this case the original abstract is over 150 words, and the attempted correction does not comply with* **37 CFR 1.121**. *(The method according to an older version of the M.P.E.P. is being used in the latest amendment.)*

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Objections

2. Claim 16 is objected to because of the following informality: the phrase "an optical guiding" should be "an optical waveguide" in line 4.. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Farchmin et al. (U.S. Patent 5,567,042).

Regarding claim 9, Farchmin et al. discloses a light reflecting reflector (reference number 26), a plurality of cold-cathode tubes (reference numbers 28a-f) disposed inside the reflector (Fig. 4), and an optical waveguide (diffuser plate, reference number 19) connected with the open end of the reflector to guide the light emitted by the cold-cathode tubes (Fig. 3), wherein the reflector has a reflective surface that reflects the light having been emitted by the cold-cathode tubes in the direction nearly perpendicular to the wall of each tube, in the direction in which the light thus reflected does not re-enter the cold-cathode tubes (Fig. 5).

Concerning claim 10, Farchmin et al. discloses the reflective surface (reference number 50) being so disposed that the surface reflects the emitted light at an angle at which the reflected light runs through the space between the cold-cathode tube and the reflector adjacent thereto or between neighboring cold-cathode tubes (Fig. 5).

Regarding claim 11, Farchmin et al. discloses the reflective surface (reference number 50) being so disposed that the surface reflects the light emitted by one cold-cathode tube at an angle at which the reflected light runs thorugh the space between the one cold-cathode tube and the other cold-cathode tube (Fig. 5) and that the surface reflects the light emitted by the other cold-cathode tube at an angle at which the reflected light runs through the space between the one cold-cathode tube and the wall surface of the reflector (Fig. 5, ray 60).

Concerning claim 12, Farchmin et al. discloses the reflective surface being composed of a plurality of curved segments (Figs. 3-5, reference numbers 54a-f).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuki (JP 10-091079) in view of JP 09282918 A (hereinafter "Okahira").

Regarding claim 15, Kazuki discloses a light source (reference number 1) having a tube with a phosphor dispersed inside the tube (fluorescent tube, reference number 1), a housing (reference number 2) that houses the tube (Fig. 3) and has a reflector formed on an inner surface (Fig. 4), and a transparent filler (reference number 3) filled

in the housing (Fig. 5), and an optical waveguide (reference number 4) guiding the light from the light source and emitting the light through a light emitting surface (Fig. 1A). Kazuki does not specifically disclose a cold cathode tube.

Okahira discloses a light source having a cold-cathode tube with a phosphor dispersed inside the tube (cold cathode fluorescent tube, English abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the cold cathode fluorescent tube of Okahira in the apparatus Kazuki to lower the cost of the device. See the English abstract of Okahira.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuki in view of Suzawa (U.S. Patent 4,487,481) and further in view of JP 09282918 A (hereinafter "Okahira et al.").

Regarding claim 16, Kazuki discloses a light source having a tube (referenced number 1), a housing (reference number 2) that houses the tube (Figs. 3 and 4) and has a reflector (reference number 2) formed on an inner surface (Fig. 4), and a transparent filler (reference number 3) filled in the housing (Fig. 8B), an optical waveguide (reference number 4) guiding the light from the light source unit and emitting light through a light-emitting surface (Fig. 8B). Kazuki does not disclose a temperature sensor or a heating element.

Suzawa discloses a cold cathode tube (column 2, lines 25-30), temperature sensor for controlling the temperature of the cold-cathode tube (column 2, lines 25-30).

Okahira et al. discloses a heating element (reference number 46a) on the inner surface of the housing (Fig. 1) for heating the cold-cathode tube (reference number 12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the temperature sensor of Suzawa in the apparatus of Kazuki stabilize the temperature of the apparatus. See the abstract of Suzawa.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the heating element of Okahira in the apparatus of Kazuki and Ichikoh to "improve the lighting of a cold cathode fluorescent lamp at low temperature." See the English abstract of Okahira et al.

Allowable Subject Matter

9. Claims 13 and 14 are allowed.

10. The following is a statement of reasons for the indication of allowable subject matter. The prior art fails to disclose a lighting unit having a second optical waveguide disposed in the space between the cold-cathode tube and the reflector and having an end that faces an end of the first optical waveguide wherein a space is formed between the cold-cathode tube and the second optical waveguide as recited in claim 13.

Response to Arguments

11. Applicant's arguments filed 28 December 2005 have been fully considered but they are not persuasive. Applicant argues that the diffuser in Farchmin is not a waveguide. To the contrary, a diffuser is a type of waveguide. The definition of

"waveguide" in the tenth edition of *Merriam-Webster's Collegiate Dictionary* contains the following: "a device . . . . designed to confine and direct the propagation of electromagnetic waves (as light)." The diffuser confines the light waves to the boundaries of the diffuser and directs the light to make a uniform illumination pattern. Furthermore the diffuser in Farchmin is white acrylic, which refracts, confines the light within the sheet and guides the light into a uniform pattern (column 2, lines 20-22, of Farchmin. Farchmin meets the limitations of claims 9-12, and the rejections stand.

Applicant goes on to note that a reference used does not specifically disclose the use of a phosphor in the cold-cathode tube. Okahira discloses a cold cathode fluorescent tube. One of the basic principles of any fluorescent tube is that phosphors are used inside the tube. See the title of the patent by J.Van Broekhoven et al. (U.S. Patent 3,255,373), "Halophophate Phosphor Material of Improved Luminosity and Maintenance Characteristics for Fluorescent Lamps."

Applicant also argues that Okahira does not disclose a heating element on the inner surface of the housing. To the contrary, this feature is disclosed in Fig. 1. Applicant argues that the claim is allowable because the reflector is not on the inner surface of the housing in Okahira. To the contrary, this feature is disclosed in Kazuki for the reasons disclosed in the rejection of claim 16.

The other arguments are rendered moot due to the new grounds of rejection and the indication of allowable subject matter above.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharon E. Payne whose telephone number is (571) 272-2379. The examiner can normally be reached on regular business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (571) 272-2378. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sep

Sharon Payne

Sharon Payne
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